



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,834	07/14/2003	Koji Wakayama	H-1100	5217
7590 04/29/2008 Mattingly, Stanger & Malur, P.C. Suite 370 1800 Diagonal Road Alexandria, VA 22314				
EXAMINER				
WONG, XAVIER S				
ART UNIT		PAPER NUMBER		
2616				
MAIL DATE		DELIVERY MODE		
04/29/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/617,834

Applicant(s)

WAKAYAMA ET AL.

Examiner

Xavier Szewai Wong

Art Unit

2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 7th March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-8 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-8 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claims **1, 4 – 8** and **10 – 15** are pending

Claims **2, 3, 9** and **16** have been canceled

Claims **1** and **12** have been amended

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7th March 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims **1, 4, 5, 8, 10** and **12** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Badamo et al (US 2002/0181476 A1)** in view of **Fukumoto et al (US 2003/0012139 A1)** and in further view of **Gilbert et al (US 6,771,595 B1)**.

Consider claims **1** and **12**, **Badamo et al** show in figure 3 an apparatus of transmitting packets having a plurality of line cards (LC-1~8), each of has interfaces for transmitting and receiving packets (network traffic 13 ↔); extension function processors (service cards SC-1~6) connected to the switches (FC(s)) wherein the plurality of service cards (SC-1~6 as extension function processors) that performs encapsulation and encryption (higher layer processing: as described in applicant specification pg. 13 ln. 11-13) on packets that were received from line cards (LC-1~8 at physical "lower" layer one) ([0033], [0036]); and based on load and throughput on each service card, a service card to which the packets are transmitted is selected from the service cards and sent back to a line card ([0047]). However, **Badamo et al** may not have *specifically* mentioned a statistic information collection processor including means for analyzing header information

imparted to the packets and means for predicting the amount of packets to be received by the plurality of (line card) interfaces from the header information and the amount of packets which have been analyzed; or on the basis of the amount of packets predicted, a extension function processor (service card) to which the packets are transmitted is selected from the extension function processor. **Fukumoto** et al disclose line cards have the capability to monitor / count the amount of packets (statistics information collecting function) during communication and determine an outgoing path in reference to (analyzing) a header imparted to IP packets ([0037-38]; *abstract*; claim 1). It would have also been obvious to one of ordinary skill in the art at the time the invention was made to implement the statistics information collecting function of **Fukumoto** et al into the, e.g. control card (CC 36) or service cards, of **Badamo** et al, or e.g. CPU 3 of **Fukumoto** et al, for assessing loads on the plurality of line cards. However, neither **Badamo** et al nor **Fukumoto** et al have *specifically* mentioned the selection of extension function processor is based on predicted number of packets, rather, **Badamo** et al selects service card bases on throughput. **Gilbert** et al disclose an expert system that predicts future traffic patterns based on number of packets received and transmitted for reallocating memory between a receiving and transmitting device (col. 4 In 3-7; claims 11,12 & 15-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the extension function processors (service cards) selection process of **Badamo** et al to be on basis of future traffic pattern prediction function as taught by **Gilbert** et al rather than on basis of throughput as taught by

Badamo et al for similar purposes of load balancing based on traffic among plurality of outputs.

Consider claim **4**, as applied to claim **1**, **Badamo** et al, as modified by **Fukumoto** et al and **Gilbert** et al, further show in figure 3 that the line cards and services cards are directly connected through a control card CC 36 ([0038]).

Consider claim **5**, as applied to claim **1**, **Fukumoto** et al further teach a header extraction unit in the line card interface for storing headers imparted to a plurality of packets which the interfaces transmit and receive ([0040]; fig. 2 items 12 & 19; fig. 11 S14), and means for transmitting the frame to the statistic information collecting processor (e.g. counter and flow identification [0042]; claim 1; fig. 2 items 16 & 17).

Consider claim **8**, as applied to claim **1**, **Fukumoto** et al further teach the plurality of line cards each comprises a statistic information collecting processor (fig. 2 items 12 & 19), which may be implemented into the service cards-side of the apparatus of **Badamo** et al as explained in claim **1** above.

Consider claim **10**, as applied to claim **1**, **Fukumoto** et al disclose the plurality of line cards *each* comprising a switch interface section and counter section and a function to monitor the amount of received packets during communication and determine an outgoing path with reference to information header (shows a relationship of header information corresponding to amount of received packets) through memory#1 and memory#0 of received IP packets ([0037-38 & 0040-42]; *abstract*; claim 1); wherein memory#1 and memory#0 show each line cards and therefore; showing a relationship

of a correspondence between header information and an output line card [through the destination port] ([0040-41 & 0053]; fig. 1 port ↔ line card links; fig. 9).

Claims **6, 7, 13, 14** and **15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Badamo et al (US 2002/0181476 A1)** in view of **Fukumoto et al (US 2003/0012139 A1)** and **Gilbert et al (US 6,771,595 B1)**, as applied to claims **5, 12** and **13**, and in further view of **Shiota (US 6,987,762 B2)**.

Consider claims **6** and **13**, and as applied to claims **5** and **12**, **Badamo et al**, as modified by **Fukumoto et al** and **Gilbert et al**, disclose the claimed invention above except may not have *specifically* mentioned the headers that are to be multiplexed into a frame and are all equal to one another in size. **Shiota** discloses (SHIM) headers stored in a frame are attached (multiplexed) into the frame and are all equal to one another in size (figs. 12 & 13; col. 13 ln. 30-51). It would have been obvious to one of ordinary skill in the art to incorporate the teachings of an apparatus that attaches (multiplexes) headers of equal sizes as taught by **Shiota** in the apparatus of **Badamo et al**, **Fukumoto et al** and **Gilbert et al**, in order to identify packet destinations.

Consider claim **14**, as applied to claim **13**, **Fukumoto et al** further disclose the header extraction unit extract a part (a portion) of an IP header (fixed length 32 bits) or TCP header (fixed length 32 bits) ([0040] ln. 9-12).

Consider claim **7**, and as applied to claim **5** above, **Badamo et al**, as modified by **Fukumoto et al** and **Gilbert et al**, disclose the claimed invention above except may not have *specifically* mentioned means for multiplexing determines length of a header

Art Unit: 2616

portion to be extracted from a plurality of packets in response to information indicating classification of the packets and that the packets are to be multiplexed into one frame.

Shiota discloses (SHIM) headers stored in a frame are attached (multiplexed) into the frame and are all equal to one another in size and further teaches the classification of packets and headers into one frame (figs. 2 (item 15), 12 & 13; col. 9 ln. 13-29; col. 13 ln. 30-61). It would have been obvious to one of ordinary skill in the art to incorporate the teachings of an apparatus that attaches (multiplexes) headers of equal sizes and classifying headers and packets as taught by **Shiota** in the apparatus of **Badamo et al**, **Fukumoto et al** and **Gilbert et al**, in order to identify packet destinations for each of the packets.

Consider claim **15**, and as applied to claim **13** above, **Badamo et al**, as modified by **Fukumoto et al** and **Gilbert et al**, disclose the claimed invention except specifically mentioning extracting a header of the received packet only by a size corresponding to information indicating classification of the packet set to a header to be imparted to each of the packets. **Shiota** discloses extracting a header of a received packet (col. 13 ln. 30-40) only by a size corresponding to classification of the packet set to a header to be imparted to each of the packets (col. 13 ln. 45-55; e.g. shim header length). It would have been obvious to one of ordinary skill in the art to incorporate the teachings of **Shiota** in the apparatus of **Badamo et al**, **Fukumoto et al** and **Gilbert et al**, for rapid MPLS and IP processing.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Badamo et al (US 2002/0181476 A1)** in view of **Fukumoto et al (US 2003/0012139 A1)** and **Gilbert et al (US 6,771,595 B1)**, as applied to claim 10, and in further view of **Kakisada et al (US 2001/0039558 A1)**.

Consider claim 11, as applied to claim 10, **Badamo et al**, as modified by **Fukumoto et al** and **Gilbert et al**, disclose the claimed invention but may not have very *specifically* mentioned renewing statistic table on basis of the amount of packets predicted. **Kakisada et al** disclose a table being renewed based on predictive frames count ([0055]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to renew statistic table based on predicted amount of packet numbers as taught by **Kakisada et al** to the statistic table of **Badamo et al**, as modified by **Fukumoto et al** and **Gilbert et al**, to efficiently allocate memory and reduce delay among different subtasks.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
2. **Kadambi et al (US 2001/0043611 A1)** disclose dynamic memory allocation on basis of estimated cell count by an egress manager and a current cell count
3. **Peleg et al (US 2004/0042398 A1)** disclose a traffic engineering technique to reduce congestion and estimating traffic over multiple links between nodes

4. **Wallentin et al (US 6,347,091 B1)** disclose predicting future packet bursts and using the prediction to change channel type from one channel type to another to carry a next burst of packets in a CDMA system
5. **Ishikawa et al (US 2003/0189932 A1)** disclose flow classification based on combination of headers; as well as, combining headers into a frame

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xavier Szewai Wong whose telephone number is (571)270-1780. The examiner can normally be reached on Monday through Friday 8:30 am - 6:00 pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571-272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Art Unit: 2616

/Seema S. Rao/
Supervisory Patent Examiner, Art
Unit 2616

Xavier Szewai Wong

X.S.W / x.s.w

12th April 2008